a reference probe having a reference arm and a measuring arm, the reference probe being coupled to the remote unit via a second optical fiber arrangement, a second beam path being formed from the second beam splitter to the reference probe.

21. (Amended) The measuring device according to claim 11, wherein the measuring device is used for measuring an internal geometry of a borehole.

## Remarks

Claims 11 to 21 are now pending.

Applicant thanks the Examiner for considering the Information Disclosure Statement, PTO 1449 Form and disclosed references.

With respect to Examiner's comments, claims 11 to 21 were rejected as indefinite under the second paragraph of 35 U.S.C. § 112. In particular, Examiner asserted a number of limitations lacked antecedent basis, a general omission of essential structural cooperative relationships in claim 11, a general reference to grammatical informalities, and a general difficulty in understanding what is claimed.

It is respectfully submitted that while the Applicant may not concede the indefinite issues as argued and raised by the Examiner, to facilitate matters, claims 11 to 21 have been rewritten to better clarify those claims for the Examiner's understanding. It is therefore respectfully submitted that the Office Action's indefiniteness rejections are now moot, and that claims 11 to 21 plainly satisfy the definiteness requirement.

It is therefore respectfully requested that the rejections be withdrawn, and that the present application issue as early as possible.

Respectfully submitted,

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## AMENDMENT VERSION WITH MARKINGS

**IN THE CLAIMS:**

11. (Amended) An interferometric measuring device for detecting one of a shape and a distance of a rough surface, the measuring device comprising:

[a measuring probe having a reference arm and a measuring arm];

at least one spatially coherent beam gun unit[, a beam emitted by the at least one spatially coherent beam gun unit being broad-band and having a short time coherence, the beam emitted by the at least one spatially coherent beam gun unit being divided into a reference beam and a measuring beam, the reference beam being guided through and reflected in the reference arm, the measuring beam being guided through the measuring arm and reflected on the rough surface] for emitting a short time coherent broad-band beam;

a first beam splitter for [forming] splitting the short time coherent broad band beam into a first partial beam and a second partial beam;

a first device for one of modulating a [light] phase of the first partial beam with respect to a phase of the second partial beam therein, and for [and] shifting a [light] frequency [corresponding to the heterodyne frequency] of the first partial beam with respect to [one of a light phase and] a [light] frequency of the second partial beam by a heterodyne frequency;

a time delay element arranged in a beam path of one of the first partial beam and the second partial beam, for producing a difference of optical wavelengths of the first and second partial beams, the difference being greater than a coherence length of the beam emitted by the at least one spatially coherent beam gun unit;

a measuring probe for dividing the short time coherent broad-band beam into a reference beam and a measuring beam, the measuring probe including a reference arm for guiding and reflecting the reference beam, and a measuring arm for guiding and reflecting the measuring beam onto the rough surface, wherein the measuring probe compensates for the difference of optical wavelength so that the measuring beam in the measuring arm and the reference beam in the reference arm are able to interfere with one another;

a superimposing unit for superimposing the reflected measuring beam on the reflected reference beam;

## AMENDMENT VERSION WITH MARKINGS

a beam splitting and receiving unit for splitting the superimposed beam into at least two beams having different wavelengths and for converting the at least two beams into electrical signals[, the at least two beams having different wavelengths]; [and]

an analyzer for determining the one of the shape and the distance of the rough surface as a function of a phase difference of the electrical signals[,]; and

a remote unit separate from the measuring probe, wherein[:]

the at least one spatially coherent beam gun unit, the first beam splitter[,]; and the first device are arranged in [a] the remote unit [remote from the measuring probe, and

the unit includes a time delay element arranged in a beam path of one of the first partial beam and the second partial beam, the time delay element producing an optical path difference of optical wavelengths of the first partial beam and the second partial beam, the difference being greater than a coherence length of the beam emitted by the at least one spatially coherent beam gun unit].

12. (Amended) The measuring device according to claim 11, wherein[:]

the [measuring probe] remote unit is a modulation interferometer.

13. (Amended) The measuring device according to claim 11, wherein[:]

the at least one spatially coherent beam gun unit includes a light source for emitting [a] the short time coherent broad-band beam.

14. (Amended) The measuring device according to claim 11, [wherein] further comprising:

[the remote unit and the measuring probe are coupled to one another via] an optical fiber arrangement for coupling the remote unit and the measuring probe to one another.

15. (Amended) The measuring device according to claim 11, wherein[:]

the remote unit further includes a second beam splitter that receives the first partial beam and the second partial beam, the first partial beam and the second partial beam being superimposed on one another at the second beam splitter, the second beam splitter forwarding the superimposed beam to the measuring probe.

## AMENDMENT VERSION WITH MARKINGS

16. (Amended) The measuring device according to claim 13, wherein[:]

the at least one spatially coherent beam gun unit includes a second light source, the second light source having a short time [coherent] coherence and being broad-band and spatially coherent, the second light source being operable one of for light amplification and as a backup light source.

17. (Amended) The measuring device according to claim 11, further comprising:

a second device for frequency shifting the first partial beam with respect to the second partial beam, the second device being arranged in the beam path of one of the first partial beam and the second partial beam[;], the first device and the second device being acoustical-optical modulators.

18. (Amended) The measuring device according to claim 14, wherein:

the beam splitting and receiving unit includes a spectral device and a downstream photo-detector matrix, the spectral device splitting the superimposed beam into a plurality of wavelengths, the downstream photo-detector matrix selectively receiving the plurality of wavelengths;

the beam splitting and receiving unit is mounted in the remote unit;

the beam splitting and receiving unit is coupled to the measuring probe via the optical fiber arrangement; and

phase differences of signals from individual detectors of the photo-detector matrix are used for determining the one of the shape and the distance of the rough surface.

19. (Amended) The measuring device according to claim 11, wherein:

the measuring probe has a beam splitter, the measuring probe being one of a Michelson interferometer and a Mirau interferometer; and

an optical path difference [produced in] provided by the measuring arm and the reference arm compensates for the difference of optical [path] wavelengths [difference] produced by the time delay element.

## AMENDMENT VERSION WITH MARKINGS

20. (Amended) The measuring device according to claim 14, further comprising:

a second beam splitting and receiving unit arranged in the remote unit; and

a reference probe having a reference arm and a measuring arm, the reference probe being coupled to the remote unit via a second optical fiber arrangement, a second beam path being formed from the second beam splitter to the reference probe.

21. (Amended) The measuring device according to claim 11, wherein[:]

the measuring device is used for measuring an internal geometry of a borehole.